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ABSTRACT

A model of educators' learning experiences in educational technology was developed by studying 205 educators who participated in professional development in educational technology at metropolitan area graduate schools of education over a 7-year period. Data were gathered over the entire semester for all participants. Additional data on a limited number of participants were also gathered one and 12-14 months after they had completed the professional development experience. All 205 participants completed a pilot survey. Additional data sources were as follows: 748 entries in electronic journals; 58 interview transcripts, and 25 reflective essays about the professional development learning experience. Qualitative and quantitative analyses of the data resulted in a model of the teachers' journey of transformation that consisted of four stages and 10 perspective transformation stages as follows: (1) fear and uncertainty (a disorienting dilemma; self-examination); (2) testing and exploring (a critical assessment of epistemic, sociocultural, or psychic assumptions; recognition that one's discontent and the process of transformation are shared; exploration of options for new roles, relationships, and actions); (3) affirming and connecting (planning a course of action; acquiring knowledge and skills for implementing one's plans; building competence and self-confidence in new roles and relationships); and (4) new perspectives (reintegration of a new perspective into one's life). (20 references) (MN)

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A Journey of Transformation:
A Model of Educators' Learning Experiences in Educational Technology

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Abstract

Based on research among 205 educators, it is indicated that learning educational technology has the potential to deeply impact educators' perspectives and practice. This paper extends the findings of previous work to provide a research-driven model of transformational learning to guide professional development in educational technology.

Introduction

As the National Council for Accreditation of Teacher Education, the US Department of Education, international educational associations, conferences and professional publications continue to fervently call for the integration of technology into education, they pose a distinct opportunity for adult education to impact teacher professional development and teacher education. In order to integrate technology into the curriculum, educators urgently need on-going professional development that will facilitate empowerment and effect change. In this context, the field of adult education can contribute guidance for professional development by providing insight and a model for such learning experiences. Rather than just keeping up with technological change, professional development could offer transformational learning opportunities for educators to begin to re-examine their and others' paradigms and expectations of teaching and learning.

Theoretical Bases of the Model

In recent years, research and writing about faculty development has discussed faculty as adult learners. Within this context comes the opportunity to utilize the adult learning theory of transformational learning as a new framework from which to examine the educators' experiences as they learn and use technology (Cranton, 1996). Together with the literatures of professional development and educational technology, this foundation lends consideration of a deeper understanding of how educators learn educational technology.

Transformational Learning

Transformational learning theory affords an explanation of educators' experiences of a fundamental change in their perspective or frame of reference as they engage in educational technology professional development. Grounded in Mezirow's theory of transformational learning as a fundamental structural shift of reference and meaning perspectives that result in striking alterations of adults' interactions with the world, this research references the ten stages that he proposed (Mezirow, 1978; Mezirow & Associates, 1990, 2000). Sifting through and reflecting on the research, literature and debate that has developed, yields an understanding that this theory grapples with complex issues of adult learning and development including types of reflection, meaning perspectives, and domains of learning (Cranton, 1994, 1996; Mezirow & Associates, 2000; Taylor, 1998).

Of particular importance to our consideration in this study, transformational learning is seen as an experience of critical questioning of beliefs and assumptions as the individual examines the framework from which they have been viewing their world. Often a "disorienting dilemma" is a trigger event that stirs this self-examination, progressing through a loosely articulated process, and over time the individual begins to shift meaning perspectives to understand their experiences and world in a new way (Cranton, 1994). Not only the content of their understanding changes, but also the very way they understand, their epistemic perspective, shifts. Cranton's more detailed modification of Mezirow's original framework is an important one that more fully articulates the individualistic aspect of perspective transformation.

Recently Mezirow helps to refine the focus of transformational learning as he describes five major developmental "movements" as critical reflection, determining something is true by using empirical methods (if it involves instrumental learning), arriving at more justified beliefs through continuing discourse (if communicative learning), taking action on the transformed perspective and acquiring a disposition to critically reflect on assumptions, seek validation through discourse and to put transformed insight into action (Mezirow, 2000, p. 344). This summary draws attention to reflection, dialogue, new perspectives, new ways of understanding, and resultant action. By focusing on these "high points" one can recognize a holistic pattern that describes the flow of the transformative process.

As one further examines transformational learning, its constructivist elements emerge as one considers how and why adult learners reflect, refine, and build new connections or new perspectives (Cranton, 1994; Kegan, 2000). The facilitation of the development of these new "connections" is a major impact of transformative learning upon learning experiences. The instrumental, communicative, and emancipatory categories of learning provide a valuable frame from which to further examine these experiences and "connections."

Professional Development

Our understanding of transformational learning in the professional development context is further informed by recognizing the diverse needs, contexts, and abilities faculty bring to technology learning. Some of these needs are unique to faculty and may be identified from the literature as including their being experts in their fields, and having unusual work schedules, and diverse work responsibilities (Baiocco & DeWaters, 1998; Lawler & King, 2000). Other professional development needs are revealed when faculty are viewed as adult learners, including their needing active learning experiences, building on prior experience and cultivating a climate of respect and safety (Brookfield, 1986; Lawler & King, 2000).

Faculty frequently approach professional development with disappointing prior experiences and yet sometimes with great need. Viewing them as adult learners, one can begin to see them as risk-takers, needing to step aside from their comfortable and familiar "expert" standing and engage as learners in areas within which they may not feel competent. However, until now an integrated adult learning model to inform professional development practice in educational technology has not been proposed.

Educational Technology

Building on the literature that depicts case histories of classroom technology use, this research provides a portrayal of change among educators and a model of common experiences of development and learning. Recognizing that the literature on educational technology has many significant and worthy suggestions for content, structure and format of training sessions (Berge & Collins, 1998; Cuban, 1998), this new model poses a different framework that has been successful among educators learning educational technology across disciplines. Educational technology becomes more than gaining skills or theory, and instead becomes an exploration of new possibilities and solutions to curriculum, teaching and learning, and ways of understanding.

By viewing faculty learning and development in the light of adult learning, professional development and educational technology theories, there exists a strong foundation for this research and the resulting model. Within this context, the fundamental theoretical premises and processes that frame the study include recognizing educators as adult learners and considering perspective transformation as a possible theory by which to examine faculty learning and change in educational technology use. This basis also indicates that a qualitative research method would be appropriate to examine these experiences (Cranton, 1996; Mezirow & Associates, 1990, 2000).

Research Design

The research questions initially considered in this study were 1) What proportion of the sampled population of educators experienced a perspective transformation in regard to technology use in their

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profession? and 2) What experiences characterized any perspective transformation? Based on the emerging analysis of the data this second research question was further refined to be: What common experiences framed and characterized the development and learning in educational technology among these educators? A mixed, qualitative and quantitative research model enabled the flexibility to follow the trends the data revealed.

Research Method

In this study, 205 educators participated in professional development in educational technology over a seven-year period. A mixed quantitative and qualitative model was used to analyze the data source and identify emergent themes of change and perspective transformation (Cresswell, 1998; Miles & Huberman, 1994). Data gathering was conducted over the entire semester for all the participants and again at one month and 12-14 months after completion for a limited number. This research included two phases: quantitative analysis of an initial, screening survey and later, in-depth analysis of several sources of qualitative data. This mixed model utilized surveys, journal entries, reflective essays and interviews as data sources. By using several data gathering methods, triangulation of emergent themes was possible.

Participants and Setting

The participants in this study were taking classes in educational technology at metropolitan area graduate schools of education over a seven-year period. The following demographic characteristics describe them. The sample was predominantly female (75.6 %, 155/205). Distribution of racial identification was White, non-Hispanic, 66.3%, Black, 10.2%, Hispanic, 9.3%, Asian or Pacific Islander, 7.3% and other, 6.9%. The mean age range was 30-39 with educators ranging in age from 21 to 69. Educators spanned the entire educational system, ranging from preschool teachers to university professors. Years of experience teaching ranged from 0 (teachers in training) to 40 with a mean of 10.53 years.

Data Gathering

As classes were conducted over the seven years of this study, data was gathered from each of the like-formatted educational technology class conducted during after their semester of study. For the initial phase of the research, an adapted and piloted survey instrument, the Learning Activities Survey Professional Development Technology Format (LAS-PDT), was used to identify those who had experienced a perspective transformation (King, 1998). The instrument's reliability and validity were again confirmed through the use of multiple sources of data to confirm analysis, member checks, and independent coding by another researcher (King, 1998, 2002). This 4-page survey presents free-response, checklists, completion statements and extended responses to identify potential transformational experiences educators may have had through the professional development sessions. Based on self-disclosure, the survey questions probe possible experiences and draw out responses to indicate the nature, scope and details of those experiences.

In addition to the survey, longitudinal data was collected in the form of electronic journals which students completed weekly. Comprehensive data was available through "end of course" reflective essays and 44 short-term and 14 long-term interviews. For this study, the data gathered included 205 completed surveys, 748 journal entries, 58 interview transcripts, and 25 reflective essays about the professional development learning experience. Gathering both quantitative and qualitative data provided a rich source of data to study the multi-dimensional qualities of perspective transformation.

Analysis

In the preliminary, quantitative analysis of these data frequencies and proportions of responses were determined. In the second phase, the coding of free responses, essays and interviews was done. As these data were examined further for common relationships and themes, a model of educator development and learning emerged – the "journey of transformation" (Miles & Huberman, 1994). A matrix of comparison with stages of perspective transformation was developed and responses grouped within that matrix.

Martin's Journey

Briefly turning to a summary of one participant's experience illustrates many of the salient characteristics of the "journey of transformation."

> Martin had been proficient in the programming languages of computers in the 70's and 80's; however, "life intervened" and he had not stayed abreast of the changes in technology. The late 90's came and Martin could not operate the computer sitting on his desk and was frustrated and confused by the technological demands placed upon him as a professor. Much of this condition came from his identity as a knowledgeable educator being threatened by the constant wave of technology change. This situation grew increasingly uncomfortable, troublesome, and embarrassing until he finally conferred with a colleague about current technology applications and his lack of knowledge and ability. Through on-going conversations, Martin gained confidence to enroll in the educational technology courses conducted in this research study.
>
> At first, Martin would wait for a carefully scripted set of instructions before starting a task on the computer. Through classroom discussions and realizing others were also beginners in technology application to education challenged his current practice and he began to explore new possibilities. Rather than only focusing on skills, Martin grasped new purposes and tested his plans to meet them. Moving from being a received knower, Martin took responsibility for his own learning, interacting with technology first-hand to discover what he needed to know to accomplish his own purposes. He developed a new comprehensive tool and process for his students to use in conducting and organizing their academic research using technology. Additionally, he began to dialogue more with his students in class, inviting their views and experiences; he gained competence and confidence in his ability to understand technology and created new connections with teaching and learning. Rather than a world waiting to be discovered, Martin began to build new constructions and explore new relationships of theory and application, all through continuing to learn and use educational technology. He empowered himself through this journey of discovery to question and construct the multiple meanings of teaching and learning with technology.

At the base of these perspective transformations is the "disorienting dilemma" found in technology's relationship to our current culture and educational expectations. Learning a new skill-set is often uncomfortable for adults, but learning technology seems to especially generate fear and uncertainty. The stories of the other educators are different in specifics, but as documented in weekly journals and interviews the overall journey remains consistent. The many changes experienced by the educators in this study are detailed elsewhere as including: emphasizing self-directed learning; using new teaching methods; incorporating critical thinking skills development in learning; employing problem-based learning; preparation and research; and confidence and empowerment of teachers and learners (King, 2000, 2002). The focus in this paper is to reveal and discuss the model of the journey as an integrative representation of transformational learning.

Martin's case classically illustrates how teachers move through the four major stages of the journey of transformation: Fear and Uncertainty, Testing and Exploring, Affirming and Connecting and New Perspectives. In each of these stages, characteristic emotions, ways of understanding and using technology, and approaches to learning technology are identified. Classic characteristics of transformational learning are embedded throughout this journey experience and provide understanding of this specific context. Overall, the educators who experience the "journey of transformation" proceed from fear and uncertainty, through beginning confidence, exploration, affirmation of their knowledge, autonomy, and finally to a new perspective of using technology in educational processes. The changes they experience have profound effects on their perspective and practice of education.

The Journey of Transformation

Along this journey of transformation, educators develop in a fluid, interdependent pattern from inexperienced, hesitant, and sometimes fearful technology users to those who are independently learning

technology and discovering new ways to change their teaching and learning and their ways of understanding. These broad stages are interwoven with the detailed stages of Mezirow's model. The proposed stages are also consistent with the fundamental understanding of the needs of educators as adult learners (Lawler & King, 2000), instructional design (Luthra, 1998), and adoption of innovation (Rogers, 1995), but provide further explanation.

The linkages between Mezirow's theory of transformational learning and educators' learning journeys are demonstrated in their *development*, the *disequilibrium* promoting learning, learning that includes *reflective abstraction*, and the construction of *structures/meaning*. The transitions from instrumental and/or communicative to emancipatory learner and from received knower to constructed knower are embedded in this model. The journey of transformation represents two major clusters of Mezirow's stages. Both the Testing and Exploring stage and the Affirming and Connecting stage represent processes that are distinct yet integrated as the educators may spend much time cycling through them over and again. While accounting for the stages outlined by Mezirow, there is a dynamic of an iterative, loosely coupled cycle in the new model.

The Journey of Transformation	Perspective Transformation Stages
Fear and Uncertainty	1. A disorienting dilemma
	2. Self-examination
Testing and Exploring	3. A critical assessment of epistemic, socio-cultural or psychic assumptions
	4. Recognition that one's discontent and the process of transformation are shared
	5. Exploration of options for new roles, relationships, and actions
Affirming and Connecting	6. Planning of a course of action
	7. Acquisition of knowledge and skills for implementing one's plans
	8. Provisional trying of new roles
	9. Building of competence and self-confidence in new roles and relationships
New Perspectives	10. Reintegration of a new perspective into one's life

Rather than an isolated learning moment, the journey emphasizes that there is a direction that some take - a general path which leads to perspective transformation - as they engage in adult learner-grounded professional development in educational technology. Similar to our understanding of the diffusion *process* of innovations (Rogers, 1995), the model is one of a journey. In contrast to the same literature, however, this model is one of fundamental transformations of perspectives, ways of understanding, and empowerment that goes beyond technology (the innovation) itself and is best explained through transformational learning theory. The journey of transformation is one of reflection, questioning, analysis, development, empowerment and promise that integrates with the theory of transformational learning.

Significance of the Study

As Kegan states, it is not so much changes in what we know, but changes in how we know that depicts transformational learning (2000, p. 50). Recognizing the potential that such changes in teaching and learning can have on educators, their students, colleagues and institutions, those interested in educational reform may find some answers in the application of transformational learning to professional development in educational technology.

The journey of transformation offers a means to build constructively on the pressure that rapid technological change brings to bear on educators. Understanding the journey of transformation's dynamics

allows us to consider how transformational learning might be alternatively conceptualized, and to explore how it may be otherwise experienced in specific settings.

Regarding research, discussion and development of multiple points of inquiry for this model in other settings need to be pursued. Such research could further test the model and provide modifications or refinement for diverse settings. For example, the model may be examined among faculty in community colleges and within different disciplines besides teacher education, such as, business, nursing, the sciences and the arts.

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